

Emergent values conflicts in formal process for managing innovation: Organizational obstacles and affordances for practice

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ABSTRACT

This work-in-progress paper presents the interpretive findings from a dissertation research project based on case research from software projects and two large product firms. It examined embedded values in product innovation processes that obstructed effective design practice.

Keywords

Innovation management, practice communities, design practice, values conflict

INTRODUCTION

Innovation processes and work practices comprise numerous activities contributing to a organization's workplace culture. Any organizational process embraces long-term commitments, locking-in enduring approaches, values, roles, and communication styles from organizational choices, and perpetuating these approaches and values (Baum and Oliver, 1992). These processes survive management change programs, reorganizations, and specific work practice changes, and manifest an organization's values in-use in their persistence (Argyris, 1992). In the large technology organizations studied, the embeddedness or organizational history of innovation process maintained values that obstructed effective product innovation and prevented organizational learning.

Poring through dozens of case studies and interviewing insightful product managers and software designers, a story emerged of deep conflicts between individual and organizational values on product teams. Further inquiry revealed these conflicts emerged as embedded in work processes for project and product management. These processes institutionalized sets of implicit organizational behaviors and power roles (the preferred practices of influential actors). The implicit control of work tasks is a well-known management procedure, but here we find these management values affecting advanced intellectual practice for product design, as opposed to rote tasks.

Organizational cultures maintain an embedded innovation "policy" through defining and controlling design and development process. By disregarding balanced participation, such processes can embrace unilateral control, manifesting in conflict with personal values and further diminishing participation.

In discussing why groupware fails to improve organizations, Zuboff (1996) explained, "the status quo eats up innovation and makes hierarchy reflected in its systems." This research locates the affordances for power and participation in organizational innovation management. It attempts to show *how* the hierarchy "eats up innovation" through interpreting the research stories of software project organizations.

INTERPRETIVE ANALYSIS METHOD

To reveal and discuss embedded values in organizational processes, a processual research method (Hinings, 1996) integrated grounded theory case analyses, cross-case analysis, and hermeneutic interpretation (Ricoeur, 1981). Focusing on the *organization*, hermeneutic interpretation informed understanding of how organizational patterns embody values and meaning in official processes, implicit social routines, and community practices.

The total body of research drew from 10 project cases, analyzed in the first phase of research, and hermeneutic analysis of the two firms contributing to the primary project research. The hermeneutic interpretations were based on 5 in-depth interviews specifically on organizational process and the transcripts from the 10 project values interviews. This approach to hermeneutic content analysis reviewed each interview for the participant's unique voice and situation. Each of the 10 project cases were initially considered separately, and evaluated with respect to their context and experience of organizational processes. After this case analysis, claims from across the sources were clustered by theme. The analysis drew repeated themes and similar meanings from the voices, and organized them into a qualitative description for each of the organizations.

Table 1 identifies 6 types of sanctioned processes for managing product innovation discovered among the cases.

Process Type	Organizational Owner(s)	Process Objective
Product Lifecycle	Business Management and/or Product Management	Official process defined for managing products from idea through maintenance
System Development Life Cycle	Product Development and/or Information Technology	Official process defined for software development method
Product Management	Product Management	Product owners managing business goals for products
Project Management	Product Management and/or IT	Official processes for project planning and control
Product Design and Development	Software Development and/or HF / User Interface Design	Adopted practices for product design and coded software artifacts
Organizational Management	Executive management and Human Resources	Official processes for organizational effectiveness and strategy

Table 1. Organizational innovation process types.

The hermeneutic critique surfaced 16 unique organizational patterns found across the cases. Table 2 defines the patterns for the two case companies identified as Data Online and Autoline Data, both large information product companies, but offering substantially different products and serving dissimilar customers. Two identical categories surfaced between the two organizations, suggesting at least two themes shared between these firms.

Data Online sanctioned 6 formal innovation processes simultaneously during the research period, all of which followed by constituents to varying degrees of fidelity. Autoline sanctioned 4 formal organizational processes for innovation, yet constituents in this firm followed their procedures faithfully, in a “cookbook” fashion. Both companies exhibited very different organizational cultures; yet both showed standard organizational processes as mechanisms for maintaining role authority and organizational values in-use.

Hermeneutic interpretations of innovation management or development process were performed for the two product organizations, following initial analyses that pointed to the significance of organizational cultural issues in values conflict. The hermeneutic critique surfaced organizational patterns found across the multiple cases discussed within each organization, with nine categories found in Data Online and seven in Autoline Data, shown in Table 2. These patterns are not suggested as a complete set of process dynamics in the organizational ecology of software product development, but draw directly from the transcript data.

Each of these patterns represents multiple occurrences of behaviors and conditions within the organization affecting product innovation. From the empirical data of the events

and behaviors from the two respective organizations, these categories induced claims reflecting the pattern’s behavior. However, as theoretical instruments, these categories also enable deductive analysis on other organizations – they point to key processes underlying the dynamics of power and participation in organizational cultures.

Two of the pattern types reflected similar claims and were named identically - Cultural integration of organizational processes, and management interventions affecting culture and process. The remaining patterns portray unique claims representing embedded organizational process values specific to each firm. Although all these patterns were found in relationship to product innovation practice, as patterns they appear to offer general understanding of the organizational values and behavior.

Data Online	Autoline Data
1. Ownership and accountability of process	1. Organizational affordances for innovation process
2. Cultural integration of organizational processes	2. Cultural integration of organizational processes
3. Formal standards for product development processes	3. Patterns of organizational process failure
4. Scale and size of organizational process	4. Organizational processes interdependency
5. Management interventions affecting culture and process	5. Management interventions affecting culture and process
6. Process intervention and managed enculturation	6. Organizational learning and defenses in managing process
7. Appropriate organizational process	7. Organizational culture spin-off
8. Informal, tacit product design practices	
9. Relationship of organizational power to design process	

Table 2. Organizational patterns in the case organizations.

Analysis of one innovation pattern shared in common

Cross-case analysis between the firms’ innovation processes reveal how the same pattern manifests their cultural differences. *Cultural integration of organizational processes* describes the issues of integrating new product or innovation management practices into the current organizational culture and values systems. This category was constituted from several claims and stories revealing the problems in cultural integration. Participants from both firms described how ignoring organizational context resulted in disuse of even well-designed processes.

Global organizational processes used in product innovation were considered valuable, if managed in ways that respected the needs of practice. Participants in both case

firms expressed the requirement for *independent* functions. In their firms, innovation process was managed by assigned committees, and were considered part of the management hierarchy. However, the need for independence was expressed, so that no internal group or individuals would benefit to the disadvantage of others. Process independence is a necessary guard against biased decisions, and reduces the likelihood of imposed agendas.

Product development organizations also allow product managers substantial authority to make decisions on behalf of large-scale projects. At the same time, product managers typically recognize no professional practice of product management endorsed as a discipline across the industry, as found with product designers and software engineers. Given this imbalance of authority and process guidance, organizations benefit by instituting product design and innovation management processes required for accountable staff and roles. The integration of such practices into a prevailing culture presents a politically challenging organizational design effort – the resulting practices require appropriate authority for widespread acceptance and a minimal learning and adoption rate to ensure use by multiple projects of varying skills.

Interpretations of the same pattern for the two firms are summarized briefly for this pattern of *cultural integration of organizational processes*. The differences reveal issues of some complexity across both case organizations.

Data Online integration of organizational process

Practice integration. One specific case illustrates Data Online's difficulty with integrating new practices. A product design team attempted to both redesign an existing Internet product and to improve its design practices using a well-known interactive design firm. However, few if any of the new practices used were actually retained by the design team's evolving process; some methods were selected and modified, but no overall integrated approach was defined.

Affordance for access to customer knowledge. Gaining knowledge of product domains also emerged as a cultural integration issue. The ability to *ask questions* (and being *allowed* to ask questions) was seen as something afforded or disallowable by actors within the organization. For product managers, designers and engineers, the customers and users were considered the best domain representatives. Access to customers for product concepts, user feedback, and prototype testing was limited by the organization in three distinct ways.

First, designers were supported in visiting users and customers only when sponsored by product managers for a specific funded project. Since customer inquiry processes were not organizationally recognized (formalized) as a standard design procedure, managers were inconsistent in their support for design inquiry. Second, even when user feedback was considered essential for product design, managers frequently withheld support for the necessary field visits, citing budget expenses or schedule reasons. And

finally, even when designers negotiated field visits to obtain customer responses to a product design, the findings were subject to arbitrary decisions by product managers overruling the findings. Designers openly discussed the difficulty they faced gaining access to customers in the field as a power issue over control of product design.

Power in design decisions. Three identified defenses afforded managers maintaining decision-making control over product direction. User feedback was often considered unwelcome by product managers, since it represented perhaps the sole source of information with the power to change any of their predetermined positions. The product development and management processes defined requirements and established a projects' scope *internally*, based on product market position and revenue considerations. Finally, requirements were not defined using a process drawing from customer insights, or even features suggested from actual product use.

Relationship to organizational affordances. Other organizational implications of these interpretations arise. If customer inquiry was discouraged for designing a revenue generating *product*, what organizational ability existed to question the *culture* disallowing effective inquiry? If the culture discouraged pursuit of "the right questions" due to hierarchy or political considerations, the organization could effectively stop learning about specific domains.

Organizational learning defenses in innovation. Data Online revealed numerous situations where researchers and designers were unable to pursue the necessary questions for design; the organization seemed to block its own knowledge gathering and customer learning. Preference was given to departmental control of product-related organizational processes, with research focusing on internal technical capabilities, not on specified customer needs.

Autoline integration of organizational process

The other case firm, Autoline, maintained a similar process committee established to deploy standard innovation methods within the organization. Autoline used fewer methodologies (4), but these were followed faithfully by most project teams as standard guidelines.

Lifecycle process integration. Organizational assimilation of the product lifecycle process was supported by instructor-led training and a team of coaches available to the product teams. Product teams initially expressed apprehension about the lifecycle process. They had no skill in the recommended methods and techniques, and were concerned for the burden of adopting such a large change in daily work.

The lifecycle process gradually developed as a "process infrastructure" for product management guidance. Its enculturation as a shared system enabled organizational learning, as those learning the process became better able to plan projects and predict development consequences, made more rational date estimates, and met product goals.

Other management processes (not for innovation) were introduced in Autoline during the research period. This period corresponded with rapid company growth, and with it came an influx of new managers from outside the culture, bringing their own practices to the organization. Some of the new managers did not assess the culture to understand how to best fit or accommodate the practices from their experience as new processes into this organization.

Initiatives generated from outside the culture failed to take hold, since the organization was not considered “ready.” However, readiness should be recognized as relative to the culture. An organization will never be “ready” even for simple practices if they are not adapted to the values and organizational mythologies pre-existing in the culture. To some extent, this asserts that cultural change cannot occur from outside the organization, but only from starting with initial values and beliefs. Once accepted nominally into the culture, substantially new practices can be introduced effectively. This occurred after the lifecycle management process was fully adopted. Several new practices, including a complex requirements methodology were integrated into the process and used throughout the organization.

Cultural issues with process. A project management process encountered substantial resistance to adoption in the organization, even after full investment in training, technical support and management backing. A training staff was available for diffusing the methods and offering team coaching, and the need for project discipline was widely acknowledged. The issues at fault with project management were also rooted in cultural values conflicts and the lack of organization context for practicing project management. The prevailing management values respected date-based project goals and executive control of time-to-market decisions. This directly conflicted with the discipline of planning projects based on analysis and estimating dates based on resources, an orientation requiring management to relinquish some power over projects. Also, the process committee initially deployed complex project management software, more suited for advanced product teams, and not easily adopted by this firm’s less experienced teams.

Innovation management by process committee. How do we know when sufficient context has been created for affording new practices? The original lifecycle process had prepared a series of simplified templates for product lifecycle management. These templates represented various software and product lifecycles typical of the firm’s current projects, and included more advanced lifecycles (e.g., spiral and incremental) recommended to the organization by a consulting study. When the process was rolled out, the committee had collapsed these lifecycles into just a single template covering all the tasks across the templates. This composite lifecycle model essentially offered only a traditional (and insufficient) “waterfall” lifecycle, the model planners had originally intended to replace using the more contemporary approaches.

This may not seem like a significant action; but what were the net effects? The process committee’s decision to support an inadequate lifecycle model (waterfall) and to oppose other approaches stifled *project management* innovation. These decisions now prevented the entire organization from adopting iterative and incremental development methods in their projects. The exclusion of these development lifecycles from organizational practice may have also contributed to diminishing competitiveness and even product delays.

Shared values change gradually, and methods easily fall into disuse in product organizations if managers fail to support them. The organization continued to embrace the lifecycle process templates, creating an affordance for project management as a *supporting practice*. By the time project practices were adopted, the product teams had deployed more informal tools. Microsoft *Project* was made available, replacing the more advanced package across the organization. Auto line’s incremental learning of a global innovation process (lifecycles) founded a set of conditions for affording the more specialized disciplines of project management and requirements definition. However, although these two disciplines evolved into continued use, disciplines of user interaction design never fared as well. Although simple design processes were trialed and even closely integrated into the lifecycle templates, they were resisted by most managers in practice. The “affordances” for design practice could be considered as not yet tenable within Autoline. Following the described model of their culture’s integration of new practice, the interpretation could be proposed that a foundation for design might be established once sufficient learning had occurred with the other three innovation processes introduced over the year.

DISCUSSION

The business of software product development is highly competitive, requiring efficient work practices and intensive labor cycles to fulfill customer demands. However, the patterns found in cultural integration not only impaired participation, they impaired *production*. These firms in effect institutionalized a kind of disregard for known practices of team coordination, knowledge sharing about customers and product design, effective and competitive product design, and even employee retention.

Learning across the cases

Interpretive analysis indicates that patterns from either case might explain behaviors in the other case. For example, development professionals in Data Online believed strongly in maintaining ownership of their work practices, and using processes that supported the necessary quality of their work. This principle might offer a recommendation to Autoline Data, where several projects were found without appropriate process guidance except high-level structures from the official product lifecycle. Autoline evidenced several useful approaches as well, which might address some of Data Online’s concerns. Autoline tended to fully

appropriate their current available processes, even if not technically ideal. Ownership of process resulted in a consistent organizational language for product management, which could be powerfully adopted in Data Online's more intellectual culture.

A paradox emerged from these cases. Both organizations evidenced cultural disregard for professional practices in favor of official processes designed and maintained by "process managers." Yet, software designers from these organizations also revealed distrust of these official processes and openly expressed the need to adopt more robust design practices, even if only locally applied at the project level.

In both firms, practice communities were largely unable to define their own codified process for their work, even while identified as the organization's experts. Processes defined by management teams leave little allowance for local knowledge. When global development processes (e.g., product management, SEI's Capability Maturity Model, and project management) were integrated into product innovation work practices, all developers and designers were affected. The interpretations reveal that *effective* knowledge-based processes draw directly from the particulars of experience and professional knowledge, "from the ground up." The values interpretation from these firms follows that management control of these particulars was, and process excellence or professional satisfaction with work quality was not as important.

Conclusions and Recommendations

In these analytic interpretations, multiple organizational factors were considered, such as culture, rewards, management metrics, policies, and resource competition. Embedded policies and values were found throughout the sanctioned innovation processes, highlighted by conflicts between process ownership and the needs of local practices to own their work.

The research analysis recommended broad and active stakeholder participation in process design, using ad hoc committees instead of formal process groups, and evaluating processes for implied biases. Engineers and designers believed that workable design processes were "lightweight," simple guidelines allowing for professional experience and learning. Processes based on basic principles, light on detail, are easily used and maintained. Rather than attempting to codify all pertinent local domain knowledge in one process, light processes support an

appropriate set of activities and sequences. If a good process should "require framing useful questions," one approach might develop a list of "expert questions" supporting flexible design and requirements. Local knowledge can be shared through other means (apprenticing, stories, Intranets) without burdening practice with undue maintenance.

By framing organizational dynamics in innovation management as embedded values problems, we gain insight into management rationale and mechanism. These organizations maintained processes that value the detailed control of work, whether productive or not. Values emerged as embedded into innovation processes through rights and responsibilities, and function mechanically. Once institutionalized, no single individual could change these processes if they wished. Both incremental and holistic change strategies might prove useful in addressing and mitigating inherent conflicts within these types of innovation processes and their organizational management. Therefore, management and practice community action should be directed toward evaluating and understanding the dynamics of embedded values and policy in process.

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